22525

11920

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

(a) Define Energy conservation.

(b) List any two functions of MEDA.

(c) List the energy conservation technique in induction motor.

(d) Define the following terms :

(i) Luminous intensity

(ii) Luminous flux

(e) State the losses in secondary distribution system.

(f) State the advantages of cogeneration.

(g) List the different types of tariff.

2. Attempt any THREE of the following : **12**

(a) State the difference between energy conservation and energy audit.

(b) Explain the energy conservation technique "By improving power quality of I.M.".

(c) State the working principle and operation of automatic power factor controller used in transmission & distribution system.

(d) Write any four merits of cogeneration.

3. Attempt any THREE of the following : **12**

(a) State the needs and benefits of star labelling.

(b) State the advantages of amorphous core transformer.

(c) Describe the following energy conservation techniques in lighting system :

(i) replacing lamp source

(ii) using light control gear

(d) State ABC analysis related to energy audit.

4. Attempt any THREE of the following : **12**

(a) Why energy conservation technique should be adopted in transformer even though its efficiency is mostly more than 90%.

(b) State the various commercial losses in transmission & distribution system. Also, state EC technique adopted for optimizing distribution system.

(c) Discuss how power factor tariff results in energy conservation.

(d) State difference between "walk through audit" and "detailed audit".

(e) Define and explain the procedure to calculate the payback period. Also, state its significance.

5. Attempt any TWO of the following : **12**

(a) (i) State the significant feature of soft starter.

(ii) Describe variable frequency drive with suitable diagram.

(b) For the tariff of ₹ 125/kVA of maximum demand and ₹ 3.00 per unit consumed ; load factor = 50%, find overall cost/unit at

(i) unity power factor

(ii) 0.8 p.f consider maximum demand = 10 kVA.

(c) Explain with flow chart the energy audit procedure.

6. Attempt any TWO of the following : **12**

(a) Describe detailed energy audit procedure to be carried out for an organization.

(b) Explain with diagram :

(i) Topping cycle type of cogeneration

(ii) Bottoming type of cogeneration

(c) Explain the following energy conservation technique :

(i) Controlling I^2R losses

(ii) Balancing phase current
